



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

8. (Amended) A manufacturing method of a semiconductor device, comprising the steps of:

forming a first oxide film on a surface of a semiconductor substrate;

5 depositing a stacked film including a first conductive layer in contact with the first oxide film;

etching the stacked film and the first oxide film to form a plurality of stacked film patterns arranged on the semiconductor substrate;

10 oxidizing the semiconductor substrate to form a second oxide film on a surface of the semiconductor substrate sandwiched between adjacent said stacked film patterns and a surface of the semiconductor substrate below end portions of the stacked film patterns wherein the second oxide film has a film thickness thicker than the first oxide film;

15 forming a side wall mask film on a side of the stacked film patterns to form mask patterns including the stacked film patterns;

removing the portion of the second oxide film sandwiched between the mask patterns and a portion of the underlying semiconductor substrate using the mask patterns as a mask to form a trench in the semiconductor substrate; and

filling the trench with an insulating film.

20 14. (Amended) A manufacturing method of a semiconductor device, comprising the steps of:

forming a first oxide film on a surface of a semiconductor substrate;

depositing a stacked film including a first layer on the first oxide film;

25 etching the stacked film and the first oxide film to form a plurality of stacked film patterns arranged on the semiconductor substrate;

30 oxidizing the semiconductor substrate to form a second oxide film on a surface of the semiconductor substrate sandwiched between adjacent stacked film patterns and a surface of the semiconductor substrate below end portions of the stacked film patterns wherein the second oxide film has a film thickness thicker than the first oxide film;

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removing the portion of the second oxide film sandwiched between the stacked film patterns and a portion of the underlying semiconductor substrate using the stacked film patterns as a mask to form a trench in the semiconductor substrate; and

filling the trench with an insulating film.

15. (Amended) The manufacturing method of a semiconductor device according to claim 14, wherein:

the step of filling the trench with an insulating film includes forming the insulating film to have a top surface having a height that essentially matches with a height of the first layer.

18. (Amended) The manufacturing method of a semiconductor device according to claim 16, wherein:

the insulating film has a top surface substantially even with a top surface of the first electrode.